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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/757,476

01/15/2004

Seong-Hak Moon

P-0642

4149

34610 7590 09/02/2008

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EXAMINER

BODDIE, WILLIAM

ART UNIT

PAPER NUMBER

2629

MAIL DATE

DELIVERY MODE

09/02/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/757,476	Applicant(s) MOON, SEONG-HAK	
	Examiner WILLIAM L. BODDIE	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,8-15 and 18-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,8-15 and 18-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In an amendment dated, May 12th, 2008, the Applicant amended claims 10, 12, 19, 21. Currently claims 1, 3, and 5, 8-15 and 18-21 are pending.

Response to Arguments

2. Applicant's arguments filed May 12th, 2008 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Abe et al. (US 6,985,141).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al. (US 5,754,155) in view of Abe et al. (US 6,985,141).

With respect to claim 1, Kubota discloses, an apparatus (fig. 1) for driving a flat display panel (LCD panel; 1 in fig. 1) comprising a scan driving unit (11 in fig. 1) for controlling an upper voltage value (V_{gh} in fig. 1) and a lower voltage value (V_{gl} in fig. 1) which are applied to an integrated circuit (IC) (3 in fig. 1) for driving a scan electrode (GL in fig. 1) of the flat display panel,

wherein the scan driving unit comprises a timing control unit (104 in fig. 20) for outputting a timing control signal (TIM in fig. 20), an upper voltage generating unit (106 in fig. 20; 15a in fig. 2) for outputting the upper voltage value, a lower voltage generating

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unit (106 in fig. 20; 15b in fig. 2) for outputting the lower voltage value, and an amplifying unit (13b in fig. 2) for amplifying the upper voltage value applied to the scan driving unit to a predetermined level (col. 9, line 61 – col. 10, line 21), wherein the scan driving outputs the amplified upper voltage value and the lower voltage value (col. 3, lines 37-43).

Kubota does not expressly disclose, wherein the scan driving unit selectively outputs one of the amplified upper voltage value and lower voltage value on the basis of the timing control signal.

Abe discloses, wherein a scan driving unit (2a,b in fig. 35) selectively outputs (224 in fig. 35) one of an upper voltage value (V_s in fig. 35) and lower voltage value (V_{ns} in fig. 35) on the basis of the timing control signal (T_{scan} in fig. 35; col. 45, lines 1-21).

Abe and Kubota are analogous art because they are from the same field of endeavor namely LCD scan driver voltage supply circuitry.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the selective output circuitry of Abe in the scan driver of Kubota for the benefit of finishing scan selection driving of all the scanning wirings within one frame period (Abe; col. 45, lines 13-16).

With respect to claim 3, Kubota and Abe disclose, the apparatus of claim 1 (see above).

Kubota further discloses, wherein the amplifying unit comprises an operational amplifier (op-amp) (clear from fig. 4; col. 9, line 66).

With respect to claim 14, Kubota discloses, an apparatus (fig. 1) comprising:
a scan driving unit (11 in fig. 1) to control an upper voltage value (V_{gh} in fig. 1) and a lower voltage value (V_{gl} in fig. 1) to be applied to a circuit (3 in fig. 1) for driving a scan electrode (GL in fig. 1) of a flat display panel (1 in fig. 1), the scan driving unit includes a timing control unit (104 in fig. 20) for outputting a timing control signal (TIM in fig. 20), an upper voltage generating unit (106 in fig. 20; 15a in fig. 4) for outputting the upper voltage value, a lower voltage generating unit (106 in fig. 20; 15b in fig. 4) for outputting the lower voltage value, and an amplifying unit (13b in fig. 4) for converting the upper voltage value applied to the scan driving unit to a current and amplifying the current to a predetermined level (col. 9, line 61 – col. 10, line 21; col. 10, lines 22-26), wherein the scan driving outputs the amplified upper voltage value and the lower voltage value (col. 3, lines 37-43).

Kubota does not expressly disclose, wherein the scan driving unit selectively outputs one of the amplified upper voltage value and lower voltage value on the basis of the timing control signal.

Abe discloses, wherein a scan driving unit (2a,b in fig. 35) selectively outputs (224 in fig. 35) one of an upper voltage value (V_s in fig. 35) and lower voltage value (V_{ns} in fig. 35) on the basis of the timing control signal (Tscan in fig. 35; col. 45, lines 1-21).

Abe and Kubota are analogous art because they are from the same field of endeavor namely LCD scan driver voltage supply circuitry.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the selective output circuitry of Abe in the scan driver of Kubota for the benefit of finishing scan selection driving of all the scanning wirings within one frame period (Abe; col. 45, lines 13-16).

With respect to claim 15, Kubota and Abe disclose, the apparatus of claim 14 (see above).

Kubota further discloses, wherein the amplifying unit comprises an operational amplifier (clear from fig. 4; col. 9, line 66).

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al. (US 5,754,155) in view of Abe et al. (US 6,985,141) and further in view of Furuhashi et al. (US 6,756,958).

With respect to claim 5, Kubota and Abe disclose, the apparatus of claim 1 (see above).

Kubota further discloses, wherein the amplifying unit comprise an OP-AMP (clear from fig. 4; col. 9, line 66).

Neither Abe nor Kubota expressly disclose, a transistor connected to an output terminal of the OP-AMP.

Furuhashi discloses, wherein an amplifying unit for a LCD scan driver comprising an OP-AMP (313 in fig. 2; col. 4, lines 17-23) and a TR (314 in fig. 2; col. 4, lines 19-23) connected to an output terminal of the OP-AMP (clear from fig. 2).

Furuhashi, Abe and Kubota are analogous art because they are both from the same field of endeavor namely, LCD scan driver voltage supply circuitry.

At the time of the invention it would have been obvious to one of ordinary skill in the art to including the transistors of Furuhashi in the amplifying circuitry of Kubota and Abe.

The motivation for doing so would have been to enhance the picture quality (Furuhashi; col. 2, lines 16-21).

6. Claims 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al. (US 5,754,155) in view of Abe et al. (US 6,985,141) and further in view of Kudo (US 6,118,425).

With respect to claims 18-21, Kubota and Abe disclose, the apparatus of claim 14 (see above).

Neither Abe nor Kubota expressly disclose wherein the upper and lower voltage generating units comprise switching devices.

Kudo discloses, a LCD power supply (fig. 12) comprising:

an upper voltage generating unit (231 in fig. 12) for outputting an upper voltage value (V_{yh} in fig. 12) on the basis of an upper switching control signal (CCH in fig. 12);
and

a lower voltage generating unit (232 in fig. 12) for outputting a lower voltage value (V_{yl} in fig. 12) on the basis of a lower switching control signal (CCL in fig. 12).

Kudo further discloses, wherein the upper and lower voltage generating units comprise switching devices (231-232 in fig. 12) which are switched on/off on the basis of the upper and lower switching control signals (CCH and CCL in fig. 12).

Kudo, Abe and Kubota are analogous art because they are both from the same field of endeavor namely, LCD scan driver voltage supply circuitry.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the switching circuitry of Kudo in the driver circuitry of Kubota and Abe.

The motivation for doing so would have been reduce shadowing and display irregularities (Kudo; col. 2, lines 39-52).

7. Claims 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al. (US 5,754,155) in view of Abe et al. (US 6,985,141) and Kudo (US 6,118,425) and further in view of Kishi et al. (5,786,794).

With respect to claims 8, 10 and 12, Kubota and Abe disclose, the apparatus of claim 1 (see above).

Neither Abe nor Kubota does not expressly disclose wherein the upper and lower voltage generating units comprise switching devices.

Kudo discloses, a LCD power supply (fig. 12) comprising:

an upper voltage generating unit (231 in fig. 12) for outputting an upper voltage value (V_{yh} in fig. 12) on the basis of an upper switching control signal (CCH in fig. 12);
and

a lower voltage generating unit (232 in fig. 12) for outputting a lower voltage value (V_{yl} in fig. 12) on the basis of a lower switching control signal (CCL in fig. 12).

Kudo further discloses, wherein the scan driving unit further comprises switching devices (231-232 in fig. 12) which are switched on/off on the basis of the upper and lower switching control signals (CCH and CCL in fig. 12).

At the time of the invention it would have been obvious to one of ordinary skill in the art to include the switching circuitry of Kudo in the driver circuitry of Kubota and Abe.

The motivation for doing so would have been reduce shadowing and display irregularities (Kudo; col. 2, lines 39-52).

Neither Abe, Kubuto nor Kudo expressly disclose, wherein the switching devices have a push-pull form turned on/off on the basis of the upper and lower switching control signals.

Kishi discloses, a LCD driver circuit wherein voltage generating unit comprises switching devices (TR6 and TR7 in fig. 1) having a push-pull form (col. 6, line 66 – col. 7, line 5) turned on/off on the basis of a switching control signal (col. 10, lines 37-61).

Abe, Kubuto, Kudo and Kishi are all analogous art because they are all from the same field of endeavor, namely LCD scan driver voltage supply circuitry.

At the time of the invention it would have been obvious to one of ordinary skill in the art to construct the voltage selectors of Kudo, Abe and Kubuto out of the push-pull transistor form taught by Kishi.

The motivation for doing so would have been both the low manufacturing costs and simple design associated with a push-pull transistor circuit.

With respect to claims 9, 11 and 13, Kubota, Abe, Kishi and Kudo disclose, the apparatus of claims 8, 10 and 12 (see above).

Kishi further discloses, wherein the switching devices comprise a FET (col. 10, lines 48-53).

Conclusion

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM L. BODDIE whose telephone number is (571)272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William L Boddie/
Examiner, Art Unit 2629
8/27/08

/Sumati Lefkowitz/
Supervisory Patent Examiner, Art Unit 2629